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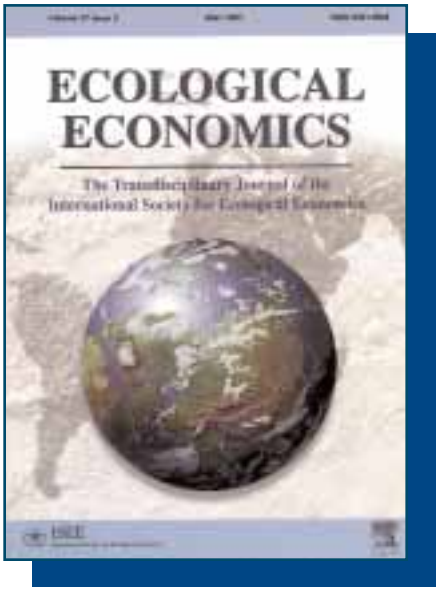
Least-cost Management of Nonpoint Source Pollution: Source Reduction Versus Interception Strategies for Controlling Nitrogen Loss in the Mississippi Basin



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"Least-cost Management of Nonpoint Source Pollution"

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Nutrients are a major source of water pollution in the United States. Agriculture is a major source of nutrients. Two alternative strategies for reducing nutrient loads from cropland are to reduce fertilizer application rates and to filter nutrients coming off cropland by restoring wetlands. A simulation analysis of these two approaches was conducted for the Mississippi Basin, where nutrients have caused a large zone of oxygen-deficient, or hypoxic, waters in the Gulf of Mexico. Fertilizer reductions impose costs on producers by potentially reducing yields and forcing an inefficient mix of inputs, given prices. Costs for restoring wetlands include land retirement and restoration costs. Both approaches can increase costs for consumers by raising crop prices. Because of the easement and restoration costs of wetlands, a fertilizer standard is more cost effective than restoring wetlands for achieving a water quality goal up to a point. Beyond that point, wetland restorations are more cost-effective.